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**REMARKS**

Claims 67-91 were pending in the subject application. Applicants have hereinabove amended claims 67, 68, 70, 72, 73, 75, 80, 82 and 86-91, and cancelled claims 76-79, 81 and 83-84. Accordingly, claims 67-75, 80, 82 and 85-91 are currently pending in the subject application.

Support for the amendment of claim 67 may be found, *inter alia*, on page 30, lines 1-4 (amino acid identity) and on page 30, lines 16-19 (nucleotide identity).

**Objections to the Specification**

In Sections 2-4 of the April 2, 2004 Office Action, the Examiner objected to page 8, line 12 of the specification for allegedly reciting a non-existent GenBank accession number; to the lack of sequence identifiers in the description of Figures 2, 3, 7 and 9, and on pages 12, 14, 15, 22, 23, 25, 26, 28, 29, 37, 38, 67-70 and 74; and to the alleged lack of description of multiple views in Figures 2, 3, 7 and 9.

In response, applicants have amended the specification to conform to relevant regulations. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the objection to the specification.

**Objection to claims 68, 72-75, 82, 87 and 88**

In Section 5 of the April 2, 2004 Office Action, the Examiner objected to claims 68, 72, 82, 87 and 88 for the following reasons:

- Claims 68, 72, and 75 recite amino acid sequences without referring to them by their sequence identifiers, as required by 37 CFR 1.821(d);

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-Claim 73 is dependent upon a rejected base claim, and encompasses non-elected sequences;

-Claim 74, in line 2, "isolate" should be "-isolated-;

-Claim 82 is objected to under 37 CFR 1.75(c), as allegedly of improper dependent form for failing to further limit the subject matter of a previous claim. The Examiner alleged that claim 80 indicates that the method is for modifying the starch content and/or composition of one or more tissues or organs or a plant, comprising the step of expressing a nucleic acid molecule in said plant, while claim 82 broadens the scope of claim 80 by introducing the nucleic acid molecule into an isolated plant cell, tissue, organ, or organelle. The Examiner further stated that claim 80 does not encompass modifying the starch content or composition of an isolated plant cell, tissue, organ or organelle. The Examiner kindly suggested that the term "further" in line 1 of claim 82 be deleted, and that the following be added at the end of claim: "and regenerating a plant from the cell, tissue, organ, or organelle comprising the introduced nucleic molecule," noting that claim 83 would need to be cancelled with the amendment to claim 82; and

-claims 87 and 88 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP §608.01(n).

In response, applicants have amended the claims in compliance with the Examiner's requirements and U.S. practice. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the objection to the claims.

**Rejection under 35 U.S.C. § 112, second paragraph**

In Section 6 of the April 2, 2004 Office Action, the Examiner rejected claims 68-70, 72 and 80-85 under 35 U.S.C. 112, second paragraph, as allegedly indefinite for failing to particularly

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point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner noted that claim 68 recites the limitation "the wheat starch synthase" in lines 1-2, but alleged that there is insufficient antecedent basis for this limitation in the claim or parent claim 67. The Examiner also noted that in claim 80, the recitation, "wheat starch synthase isoenzyme of said plant" in lines 8-9 and line 10-11 renders the claim indefinite in that the preamble of the claim indicates that the method is for modifying starch content in a plant, while part (ii) and (iii) indicate that the plant is wheat. The Examiner alleged that this renders the claim indefinite because it is not clear if the method is limited to wheat plants. The Examiner also alleged that in claim 84, the recitation, "wherein the nucleic acid molecule is introduced to the plant cell, tissue, organ, or organelle by introgression" renders the claim indefinite in that "introgression" or "introgressive hybridization" is defined in the art as hybridization between two species in which the genes of one species gradually diffuse into the gene pool of another (Holmes, S., Henderson's Dictionary of Biological Terms, 9<sup>th</sup> Ed., Van Nosand Reinhold Co., New York, 1979, page 218). The Examiner noted that claim 84 is dependent on claim 82, which indicates that the recited plant parts are in isolated form, and alleged that it is not clear what is meant by introgression of isolated plant cells, tissues, organs, or organelles.

In response, applicants have amended the claims to more clearly define the invention in compliance with 35 U.S.C. § 112, second paragraph. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejection under 35 U.S.C. § 112, second paragraph.

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**Rejection under 35 U.S.C. § 112, first paragraph**

**- Written Description**

In Section 7 of the April 2, 2004 Office Action, the Examiner rejected claims 68, 69, 71, 72, 75 and 80-85 under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description requirement. Applicants note that claim 67 is not included in this rejection.

The Examiner summarized the claims and the disclosure, and then asserted that the specification does not teach nucleotide sequences encoding a starch synthase and having at least 85% identity to SEQ ID NO: 3, or encoding an amino acid sequence having at least 85% identity to SEQ ID NO: 4, wherein the polypeptide comprises one or more sequences from (a)-(h) recited in claim 68, or (a)-(f) recited in claim 72. The Examiner stated that these recited sequences in claims 68 and 72 do not appear in the wheat starch synthase II polypeptides disclosed in the specification, noting that the specification teaches that the aforementioned sequences recited in claims 68 and 72 appear in SSIII enzymes (page 67, lines 25-27). The Examiner then alleged that the specification does not correlate the structure of any nucleotide sequence encoding a polypeptide comprising the aforementioned amino acid sequences with the starch synthase activity possessed by SEQ ID NO: 4.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have amended claims 68 and 72 to remove the sequences recited in original parts (a)-(h) and (a)-(f), respectively. Accordingly, this basis for the written description rejection should be withdrawn.

The Examiner then asserted that the method of claim 80 encompasses fragments of the isolated nucleic acid molecule of

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claim 67 that encode a functional wheat starch synthase, but that the specification does not describe the structure of any fragment of SEQ ID NO: 3 that encodes a functional starch synthase.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have amended claim 80 to remove the recitation in part (iii) of the claim of a fragment of SEQ ID NO:3 which encodes a functional wheat synthase isoenzyme. Accordingly, this basis for the written description rejection should be withdrawn.

The Examiner then asserted that claim 75 is drawn to a probe or primer comprising at least 15 contiguous nucleotides of the isolated nucleic acid of claim 67, and comprising specified nucleotide sequences, but that SEQ ID NO: 3 does not contain the nucleotide sequences listed in SEQ ID Nos: 25-28, or nucleotide sequences encoding amino acid sequences of parts (a)-(h) of part (v) of claim 75.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have amended claim 75 to remove the sequences recited in original parts (i), (iv), and (v) (a)-(h). Accordingly, this basis for the written description rejection should be withdrawn.

In view of applicants' amendment, all of the bases recited in support of the written description rejection are moot and the rejection under 35 U.S.C. § 112, first paragraph, written description, should be reconsidered and withdrawn.

**Rejection under 35 U.S.C. § 112, first paragraph**  
**- Enablement**

In Section 8 of the April 2, 2004 Office Action, the Examiner

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rejected claims 68, 69, 71, 72, 75 and 80-85 under 35 U.S.C. 112, first paragraph, alleging that the specification, while being enabling for a) isolated nucleotide sequences encoding SEQ ID NO: 3, b) probes and primers comprising at least 15 contiguous nucleotides of SEQ ID NO: 3, c) a method of modifying the starch content and/or composition of one or more tissues or organs of a plant comprising expressing SEQ ID NO: 3 to co-suppress an endogenous wheat starch synthase or d) expressing SEQ ID NO: 3 in antisense orientation, does not reasonably provide enablement for nucleotide sequences having at least 85% identity with SEQ ID NO: 3 or encoding a polypeptide having at least 85% identity with SEQ ID NO: 4 wherein the polypeptide comprises the sequences recited in parts (a)-(h) in claim 68 or (a)-(f) of claim 72, or wherein the nucleotide sequence comprises the sequences set forth in SEQ ID Nos: 25-28, or fragments that encode a functional wheat starch synthase; the method of claim 80 where the fragment of part (ii) is expressed to down regulate the expression of an endogenous wheat starch synthase in any other manner; or said method wherein isolated plant cells, tissues, organs, or organelles are introgressed. Applicants note that claim 67 is not included in this rejection.

The Examiner summarized the claims and the disclosure, noting that the specification teaches the nucleotide sequence (SEQ ID NO: 3) of a cDNA encoding a wheat starch synthase II (SEQ ID NO: 4). The Examiner then alleged that the specification does not enable the isolated nucleic acid molecules of claim 68 wherein the encoded polypeptide comprises any of the sequences recited in parts (a)-(h); noting that some of the same sequences also recited in claims 72 and 75. The Examiner noted that the specification teaches that those sequences are found within WSIII polypeptides (page 67, lines 25-27), whereas SEQ ID NO: 4 is a WSII polypeptide. The Examiner also noted that the specification

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also does not teach that SEQ ID NO: 3 comprises the nucleotide sequences set forth in SEQ ID Nos: 25-28, but, rather, that those sequences are within non-elected SEQ ID NO: 1.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have amended claims 68 to remove the sequences recited in original parts (a)-(h), claim 72 to remove the sequences recited in orginal parts (a)-(f), and claim 75 to remove the sequences recited in original parts (i), (iv), and (v) (a)-(h). Accordingly, this basis for the enablement rejection should be withdrawn.

The Examiner then alleged that the specification fails to enable the method of modifying starch content and/or starch composition comprising expressing a fragment of the nucleic acid molecule encompassed by claim 67 wherein the fragment encodes a functional wheat starch synthase isoenzyme.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have amended claim 80 to remove the recitation in part (iii) of the claim of a fragment of SEQ ID NO:3 which encodes a functional wheat synthase isoenzyme. Accordingly, this basis for the enablement rejection should be withdrawn.

The Examiner then alleged that the specification does not enable the claim method when the fragment of part (ii) of claim 80 is a ribozyme.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have amended claim 80 to remove the possibility that the fragment of part (ii) is a ribozyme. Accordingly, this basis for the enablement rejection

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should be withdrawn.

The Examiner similarly also alleged that the specification also does not enable the claimed method when the fragment of part (ii) of claim 80 is a gene-targeting molecule.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have amended claim 80 to remove the possibility that the fragment of part (ii) is a gene-targeting molecule. Accordingly, this basis for the enablement rejection should be withdrawn.

The Examiner then alleged that the limitation of "introgression" introduced by claim 84, and the limitation of introduction into an organelle of both claims 84 and 85 are not enabled by the specification.

In response to the basis for the rejection summarized in the immediately preceding paragraph, applicants have canceled claims 84 and 85 without prejudice. Accordingly, this basis for the enablement rejection should be withdrawn.

In view of applicants' amendment, all of the bases recited in support of the enablement rejection are moot and the rejection under 35 U.S.C. § 112, first paragraph, enablement, should be reconsidered and withdrawn.

#### Rejections Under 35 U.S.C. §§ 102(b) and (e)

In Section 9 of the April 2, 2004 Office Action, the Examiner rejected claims 67, 68, 70, 72, 74, 75, 80-83, and 85-91 under 35 U.S.C. §102(b) as allegedly anticipated by Block et al. (WO/9745545). The Examiner alleged that Block et al. teach the isolation and sequences of a cDNA (SEQ ID NO: 6) encoding a wheat

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starch synthase (SEQ ID NO: 5), and that the nucleotide of SEQ ID NO: 6 and the amino acid sequence of SEQ ID NO: 5 have at least 85% identity to instant SEQ ID NO: 3 and SEQ ID NO: 4, respectively. The Examiner also alleged that SEQ ID NO: 6 of Block et al. also comprises one or more amino acid sequences of Markush group of instant claims 68 and 72, including at least six of the sequences shown in (i)-(p) of claim 68. The Examiner also alleged that SEQ ID NO: 5 itself can be considered to be a probe or primer, and that Block et al. indicate that initially a partial sequence consisting of bases 1084 to 2825 of SEQ ID NO: 5 was determined, which is at least 15 contiguous nucleotides. The Examiner further alleged that Block et al. also teach vectors comprising the cDNA operably linked to a promoter, and comprising an origin of replication; transgenic plants comprising, progeny of said plant, or propagules of said plants, comprising SEQ ID NO: 5; a method which results in the modification of the starch content and/or composition of plants, the method comprising expressing SEQ ID NO: 5 or fragments thereof in plants in antisense orientation, to cause the co-suppression of an endogenous starch synthase; and plants in which the method can be practiced include wheat, referring to pages 6-8, 16-18, 29-36, 41-44, 63-66.

In Section 20 of the April 2, 2004 Office Action, the Examiner rejected claims 67, 68, 70, 72, ,74, 75, 80-83, and 85-91 under 35 U.S.C. 102(e) as allegedly anticipated by U.S. Patent No. 6,307,125 to Block et al. The Examiner noted that U.S. Patent No. 6,307,125 is a continuation of WO/9745545, and contains the teachings discussed above, referring to col. 3., line 58 to col. 4, line 55; col. 7, line 18 to col. 9, line 33, col. 13, line 48 to col. 14, line 49; col. 14, line 63 to col. 17, line 48; col. 19, line 65 to col. 21, line 37; claims.

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In response, to advance prosecution of the subject application, but without conceding the correctness of the Examiner's position, applicants have amended the claims to require that their nucleic acid molecule has at least **97%** sequence identify to the encoding region of the nucleotide sequence set forth in SEQ ID NO: 3, and encode a polypeptide having at least **97%** identify to the amino acid sequence set forth in SEQ ID NO: 4. As amended, the claims are patentable over the Block et al. PCT International Publication and U.S. Patent. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw the rejections under 35 U.S.C. §§ 102(b) and (e).

**Conclusion**

In view of the amendments and remarks hereinabove, applicants respectfully request that the Examiner reconsider and withdraw the rejections and objection set forth and earnestly solicit allowance of the pending claims.

**SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT**

In accordance with their duty of disclosure under 37 C.F.R. §1.56, applicants would like to direct the Examiner's attention to the following disclosure, which is listed on Form PTO-1449 (**Exhibit A**). A copy of the disclosure listed below as item 1 is attached hereto as **Exhibits 1**.

1. U.S. Patent No. 6,734,339, issued May 11, 2004 to Block et al. (**Exhibit 1**).

Applicants note that U.S. Patent No. 6,734,339 is a divisional of U.S. Patent No. 6,307,125 to Block et al. cited by the Examiner in the April 2, 2004 Office Action.

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SUPPLEMENTAL SEQUENCE LISTING

Applicants will forward a Supplemental Sequence Listing in compliance with the requirements of §1.821-1.825 shortly, which Sequence Listing will include SEQ ID Nos: 55-59.

No fee, other than the \$980.00 three-month extension fee, is deemed necessary in connection with the filing of this Amendment. However, if any additional fee is required, authorization is hereby given to charge the amount of any such fee to Deposit Account No. 03-3125.

Respectfully submitted,

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